



DOES INNOVATION CAPABILITIES LEAD TO COMPETITIVE ADVANTAGE IN THE SUDANESE INDUSTRIAL FIRMS

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ABSTRACT

This study examines how innovation capabilities can achieve competitive advantage. This study attempts to establish the impacts of elements of innovation capabilities on competitive advantage in Sudanese industrial firms. This study thoroughly reviews pertinent literature expected two aspects of innovation capabilities: radical and incremental innovation. The research questions were investigated through questionnaires with top-level managers operating in Sudanese industrial firms in Khartoum State. The study used structural equation modelling (SEM) for analysis. The results show that incremental innovation is significantly positive with competitive advantage (cost, quality, flexibility, and delivery), while radical innovation is not significant to the competitive advantage (quality, delivery).

1. Introduction

The concept of competitive advantage has a long tradition in the strategic management literature. Competitive advantage is defined as characteristics of unique opportunities within the field defined by the product-market scope and growth vector. It seeks to identify properties of individual product-market, which will give the firm a strong competitive position (Meihami & Hussein 2013). Competitive advantage represents a factor or a combination of factors that have a direct or an indirect impact on the stability or the growth of the organization in the market, which includes active participation in the economic impact and increase the stability of the profits through the optimal utilization of available resources (Alnajjar, 2016). Competitive advantage occurs when an attribute or combination of attributes in an organization are acquired or developed that allows the organization to outperform its competitors. In a service-oriented business, a competitive edge is well achieved through innovative value-creating strategies, and their implementation is simultaneous by any current or potential player (Wanyoike, 2016).

Innovation, in general, the implementation of a novel or drastically improved product, process, marketing or organizational methods in workplace organization, business practices, or external relations, innovation is recognized as one of the growth strategies to enter new markets, to increase market share and to provide the company with a competitive edge (Seyed et al., 2018). Regarding the impact of innovation capability on competitive advantage, the theoretical and empirical literature reflects the importance of firms innovating to achieve enhanced performance (Laith et al., 2015). However, many studies have explored the impact of innovation capabilities on competitive advantage (Karanja et al., 2018; Perin et al., 2016; Coccia, 2016; Hahmideh & Gharneh, 2017; Alrubaiee et al., 2015; Samsir et al., 2017; Wanjiku, 2018; Nawab et al., 2015). Previous studies addressed innovation capabilities as four dimensions (Damanpour, 2018; Jalili et al., 2015), other studies (Vafaeid et al., 2017; Christian et al., 2017; Nsor et al., 2016). This study used innovation capabilities (radical and incremental innovation) with competitive advantage (cost, quality, flexibility, and delivery). Therefore, this study represents a modern study in the Sudanese environment. So this study tries to fill the gaps from the literature review. The objective of this study is to examine the relationship between innovation capabilities and competitive advantage. The theoretical significance of this study is to attempt to build a conceptual framework that will contribute to the theories. Also, the study will provide scientific guidelines and devices for industrial firms operating in Sudan. To achieve efficiency and effectiveness. This study will make the managers aware of the change and complexity of the business environment and courage the managers to play a greater role in activities related to the development.

2. Literature Review

2.1 The Concept of Innovation Capabilities:

The concept of innovation is central to economic growth, and it can lead to sustained competitive advantage, which firms should strive to achieve. Innovation is intentional, and it requires that individuals are motivated (Moretto, 2017).

Innovative capacity, as defined as the internal potential to generate new ideas, identify new market opportunities and implement marketable innovations through exploration of the company's existing resources and capacities (Mello et al., 2017). Innovation capability can be described as the ability to continuously transform knowledge and ideas into new products, processes and systems for the firm and its stakeholders. Innovation capability not only refers to the ability to be successful in managing a business new stream but is also concerned with the ability to synthesize operating paradigms (Omer et al., 2017). Innovation, in general, the implementation of a novel or drastically improved product, process, marketing or organizational methods in workplace organization, business practices, or external relations, innovation is recognized as one of the growth strategies to enter new markets, to increase market share and to provide the company with a competitive edge (Seyed et al., 2018). Believe that innovation capability is not only an ability to run a business new stream or manage mainstream capabilities but synthesizing these two operating paradigms (Hahmidei & Gharneh, 2017).

2.2 Radical Innovation:

Radical innovation is groundbreaking, frame breaking, discontinuous, disruptive change in technology, product, or process. These cause profound organizational and market changes. Radical innovation is seen by many as a critical future success of organizations (Wash, 2018). Radical innovation is expected to imply more fundamental changes for the company's activities, and it's often related to high risks during both the development and commercialization compared to incremental innovation. Radical innovation is products that have a high impact on existing markets or create wholly new markets by offering new benefits, significant improvements in known benefits, or significant cost reduction (Perin et al., 2016). Radical innovations involve the creation of new markets (Rubera & Kirca, 2012) or making bigger changes that destroy existing positions on the market today and make current obsolete products (Beck, Lopes-Bento, & Schenker-Wicki, 2016). However, radical innovation is uncertain about assuming greater levels of risk (Perin et al., 2016). Moreover, radical product innovations facilitate customer loyalty and faster market penetration while reducing costs, volatility, and vulnerability of cash flows (Boso et al., 2016).

Radical innovation is the offering of new-to-the-world performance features or significant improvements in known ones. Radical innovation provides substantially higher customer benefits compared to previous products in the industry. Based on the model, radical innovation provides the highest degree of newness technology and customer fulfilment (Moretro, 2017). Radical innovations enable organizations to achieve sustainable competitive advantages in the long term by generating economic rents; these innovations offer greater customer benefits, cost reductions, or capabilities to create new businesses, any of which should lead to higher organizational performance (Slater et al., 2014).

2.3 Incremental Innovation:

Incremental innovations are minor improvements or simple adjustments in current technology that improve price/or performance advance at a rate consistent with existing technical trajectories (Patrick et al., 2018). Incremental innovation attempts to meet the needs of current customers of markets at a rate consistent with the current technological trajectory. The strategic focus of incremental innovation is market dominated growth with diversification by improving and expanding current products and services quickly; incremental innovation projects call for the ability to reinforce, recombine, and take advantage of existing knowledge resources (Lee, 2011). Incremental innovations can easily be defined as products that provide new features, benefits, or improvements to the existing technology in the existing market. An incremental new product involves adapting, refining, and enhancing existing products and production and delivery system (Garcia & Calantone, 2018). Incremental innovation is a modification in a product which is also called line extension or market pull innovation. Incremental innovation does not need to diversify from current business significantly. That is why this type of innovation enhances the skills and competencies of the organizational employees (Plessis (2007). Exploitative innovations are based on the existing companies' resources and are represented by small improvements in methods, technologies, or products. This type of feed on best practices and routines generated in the past. This type of innovation is called incremental innovation designed for existing customers or markets (Jansen et al., 2006).

2.4 Competitive Advantage:

The concept of Competitive advantage has a long tradition in the strategic management literature. Competitive advantage is thus defined characteristics of unique opportunities within the field defined by the product-market scope and growth vector. It seeks to identify properties of individual product-market, giving the firm a strong competitive position (Meihami & Hussein 2013). Competitive advantage represents a factor or a combination of factors that have a direct or an indirect impact on the stability or the growth of the organisation in the market, which includes active participation in the economic impact and increase the stability of the profits through the optimal utilisation of available resources (Alnajjar, 2016). Competitive advantage or edge is a strategic objective of firms that is difficult to achieve due to the competitive challenges in the knowledge economy (Hamid., Gibreel and Essa, 2018). Competitive advantage helps in achieving the added value of the organisation and guarantees its survival and sustainability. Some characteristics that include uncommonness, invaluable and indispensable human resources, cordial customer relationships, and systems give an organisation a competitive advantage that results in a sustainable competitive position (Chahal, 2015). Competitive advantage implies the creation of a system that has a unique advantage over competitors. The idea is to create customer value efficiently and sustainably to be interpreted as building a competitive advantage where companies are advised to form a unique system and have advantages over the other competitors to provide more value to consumers efficiently to

be maintained. Good value in the eyes of consumers is where the company can meet the needs of consumers well and well-served consumer) Afriapallo 2016). Competitive advantage (CA) is the organisation's capability to carry out its activities in ways others cannot imitate. Features of sustainable companies comprise creating long-term financial value, knowing how activities influence the environment and act towards reducing negative impacts, care about their stakeholders, and understanding employees, community, and customers related to each other (Ch&Rohana,2016). Competitive advantage occurs when an attribute or combination of attributes in an organisation are acquired or developed that allows the organisation to outperform its competitors. In a service-oriented business, a competitive edge is well achieved through innovative value-creating strategies, and their implementation is simultaneous by any current or potential player (Wanyoike, 2016). Competitive advantage grows from the values or benefits created by the company for its buyers. Customers generally prefer to buy products that have more value than they desired or expected. However, the value will also be compared with the price offered. Purchasing the product will occur if customers price considers the price of the products is appropriate with the value offered (Samsir 2017).

2.5 Cost

Cost is one of the important variables in achieving competitive advantage by reducing the cost of production in a percentage that achieves the desires of a wide range of customers by reducing the total cost of service products, with the need to realize that the strategic goal of reducing cost is not absolute, but according to the governed conditions and regulations. Therefore, the organization that adopts the least cost should focus on the production process, starting from the supplier and ending with the arrival of the product to customers and control overall products and costs associated with production and provide new value-inexpensive services (Al-Najjar, 2016).

Cost is one of the most basic dimensions for competition, and that many organization try to rely on reducing their product cost to achieve a competitive advantage, which means that the organization carry on the product and marketing of products at the lowest possible cost compared to its competitors enabling it to sell at a lower price (Alhayali et al., 2013). Phusavat & Kanchana (2007), competing on cost focuses on effectively managing production cost, including related aspects such as overhead, inventory, and value-added. Zho et al. (2002) further describe this as the ability to reduce product costs by reducing overheads, labour, raw materials costs and production cycle time. Cost is one of the most basic dimensions for competition, and that many organizations try to rely on reducing their product cost to achieve a competitive advantage, which means that the organization carries on the production and marketing of products at the lowest possible cost compared to its competitors, enabling it to sell at a lower price (Alghamdi, 2016)

2.6 Quality

The ability to offer products and services at the lowest cost and free of defects, and to ensure the achievement of discrimination to the organization under the existing competition in the market and represent the overall attributes and characteristics of the product and the service that meets the needs of customers, quality is known as one of the most important factors for the survival and growth of the organization and to maintain its competitiveness (Gupta, Garg& Kumar, 2014,). Quality is the degree of excellence of a particular product or service, with the global automaker embracing this idea with the corporate slogan quality is job1. Quality is also concerned with product longevity and strength and consumer satisfaction in the after-sales service process and through advertisement through word-of-mouth (Wawmayura et al., 2017). Quality is a competitive weapon in the marketplace. It engenders a competitive advantage by providing products that meet or exceed customer needs and expectations. Quality is defined using different perspectives, as it is a personal goal that has indefinable characteristics. Quality as fitness for use Juran's definitions employs the customers perspective in defining quality, and it is the customer who decides what goods or services best satisfy their needs (Awwad, 2010). A similar approach is taken by (Abdulkareem et al., 2013), who define quality as excellence, value, conformance to specifications and meeting or exceeding customers' expectations. Quality means what the customer wants; in other words, a product is of high quality when it agrees with customers' needs and demands (Hosseini et al., 2018).

2.7 Flexibility

Flexibility is the company ability to offer a variety of products promptly and the company ability to develop existing products and improve its operations to offer new products that meet the needs and desires of customers; flexibility is the ability of the organisation to respond quickly to changes on the characteristics of the products design or changes related to the size of customers' orders and the multiplicity of their desires (Al-Najjar, 2016). Flexibility also encompasses product flexibility in the first place, which is defined as the organisation's ability to trace changes in consumers' needs, tastes, and expectations to carry out changes in product designs. The second flexibility is volume, which stands for the organisation's ability to respond to consumer demand changes (Abou-Moghli et al., 2012). Flexibility is essential for a firm to respond to changing demand resources and competitive conditions in the international market(Hamid, Elhakem, and Ibrahim 2017). Flexibility can be used both as an adaptive response to environmental uncertainty and to proactively create market uncertainties for competition. There are two interdependent dimensions of flexibility: the time dimension that focuses on speed of response to customer needs and the arranges dimension that focuses on the ability to meet customisation, and the volume requirement that is defined by the customer efficiently and cost-effectively (Mugdadi, 2015). Flexibility is another important operational performance measure, which is described as the ability of the company to adapt and respond to diversity or change, give customers individual treatment, or introduce new products/services (Chavez et al., 2015).

2.8 Delivery

Delivery is a competitive priority because customers are interested in satisfying their needs and want in the right quantity at the right time (Awwad et al., 2013). The delivery or time dimension is considered the basic rule of competition between companies in the market by focusing on reducing the time and increasing the speed of the design of new products and presenting them to customers in the shortest possible time (Altaweel & Ragheed, 2008). The delivery or time dimension is considered the basic rule of competition between companies in the market by focusing on reducing the time and increasing the speed of design of new products and presenting them to customers in the shortest possible time (Alghamdi, 2016). Delivery is a competitive priority via which customers are interested in satisfying their needs and wants in the right quality at the right time. In this context, state that delivery of the required function means ensuring that the right product (meeting the requirements of quality, reliability and maintainability) is delivered in the right quantity, at the right time in the right place, from the right source (a vendor who is reliable and will meet commitments in a timely fashion), with the right service (both before and after the sale), and finally at the right price (Awwad et al., 2010). Diab, (2014) the speed of service and response to customer demand has become one of the factors of competition between organisations; this is linked to the customer's willingness to pay a higher cost for the services or products they need in a timely. Whenever the organisation can respond to the customer's needs and requirements quickly and shortest time over competitors, the organisation receives a larger market share and charges higher prices for their services until the arrival of competitors to the market.

2.9 Resource-Based View (RBV)

The resource-based view of the firm (RBV) draws attention to the firm's internal environment as a driver for competitive advantage. It emphasises the resources that firms have developed to compete in the environment (Hoskisson et al. 1999). The focus was on the internal factors of the firm. The origins of the RBV go back to Penrose (1959), who suggested that the resources possessed, deployed, and used by the organisation are more important than industry structure. The term 'resource-based view' was coined much later by Wernerfelt (1984), who viewed the firm as a bundle of assets or resources tied semi-permanently to the firm (Wernerfelt 1984). Prahalad and Hamel (1990) established the notion of core competencies, which focus attention on a critical category of resource – a firm's capabilities. Barney (1991) also argued that a firm's resources are its primary source of competitive advantage. According to Ramos-Rodríguez and Ruiz-Navarro's (2004) bibliometric study of the Strategic Management Journal over the years 1980–2000, the most prominent contribution to strategic management discipline was the Resource-Based View of strategy. In addition, the papers written by Wernerfelt (1984) and Barney (1991) are the two most influential articles in strategic management research (Ramos-Rodríguez & Ruiz-Navarro 2004). Early researchers classified firms' resources into three categories: physical, monetary, and human (Ansoff, 1965). These evolved into more detailed descriptions of organisational resources (skills and knowledge) and technology (technical know-how) (Hofer & Schendel 1978). Amit and Shoemaker (1993) proposed an alternative taxonomy involving physical, human, and technological resources and capabilities. Lee et al. (2001) argued for a distinction between individual-level and firm-level resources. Miller and Shamsie (1996) classified resources into two categories: property-based and knowledge-based. Barney (1991) suggested that other than the general resources, there are additional resources, such as physical capital resources, human capital resources and organisational capital resources. Later, Barney and Wright (1998) add human resource management-related resources to this list of additional resources of a firm. These resources can be tangible or intangible (Ray et al. 2004). Wenerfelt (1984) also discussed that resources might be tied semi-permanently to the firm. Barney (1991) drew attention to 'all assets, capabilities, organisational processes, firm attributes, information, knowledge etc., controlled by a firm that enables it to conceive of and implement strategies that improve its efficiency and effectiveness. Ultimately, firms that can leverage resources to implement a 'value-creating strategy not simultaneously being implemented by any current or potential competitor' (Barney 1991) can achieve a competitive advantage. Researchers subscribing to the RBV argue that only strategically important and useful resources and competencies should be viewed as sources of competitive advantage (Barney 1991). They have used terms like core competencies (Barney 1991; Prahalad & Hamel 1994), distinctive competencies (Papp & Luftman 1995) and strategic assets (Amit & Shoemaker 1993; Markides & Williamson 1994) to indicate the strategically important resources and competencies, which provide a firm with a potential competitive edge. Strategic assets are 'the set of difficult to trade and imitate, scarce, appropriable and specialised resources and capabilities that bestow the firm's competitive advantage (Amit & Shoemaker 1993).

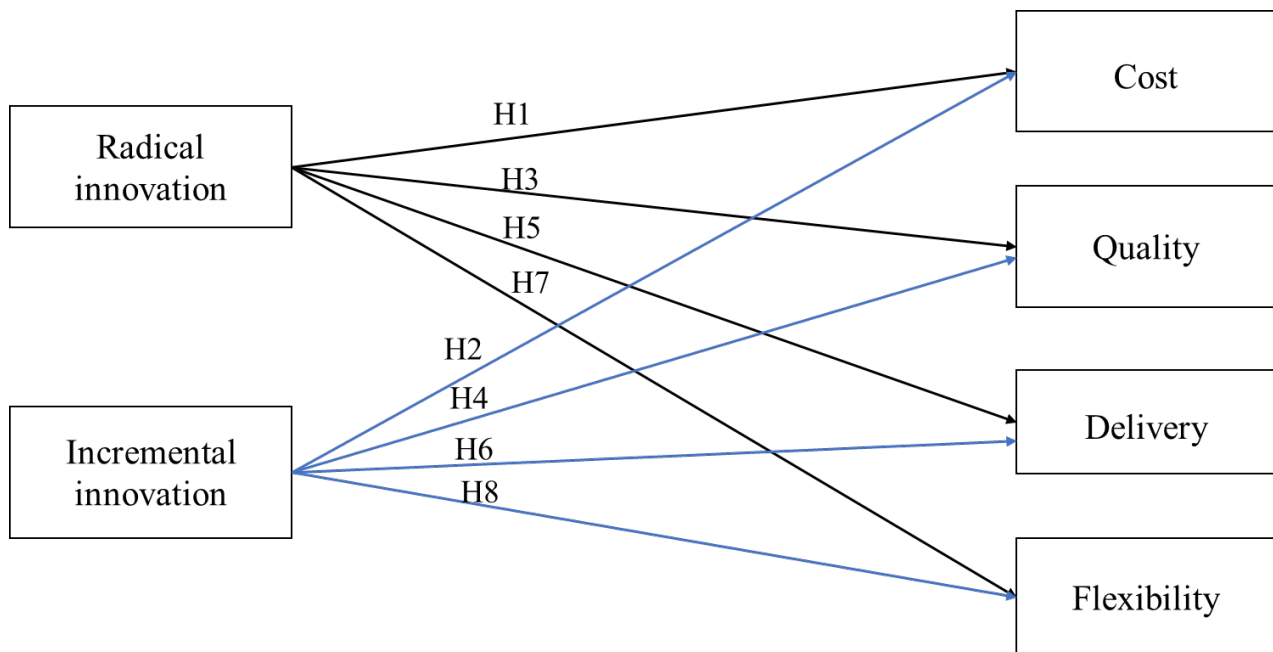


Figure: 1 Conceptual framework

3. Hypotheses Development

3.1 Relationship between innovation capability and competitive advantage

Titus et al. (2017) emphasize that organizational innovation plays a significant role in sustainable competitive advantage and innovation forms the basis for building sustainable competitive advantage, (Aida, 2017) product innovation affected competitive advantage in small and medium enterprises of typical food products of Riau in Kepulauan Meranti Regency, also product innovation in the company is a basic need, which in turn will lead to a competitive advantage, shows that product innovation has a positive effect on competitive advantage. (Mburu 2016) shows that innovation strategies influence competitive advantage and have a positive and significant effect on competitive advantage. Product innovation is critical in enhancing competitive advantage (Eugenie et al., 2016) stated that innovation had a positive effect on business performance, (Marcelo et al., 2016) states that radical innovation becomes a source of competitive advantage for companies in emerging economies; also, radical innovations play a crucial role for organizational performance.

3.2 The innovation capabilities are positively related to competitive advantage.

Developed sub hypotheses from third hypotheses as follows:

- H1: Radical innovation is positively related to cost*
- H2: Incremental innovation is positively related to cost*
- H3: Radical innovation is positively related to quality*
- H4: Incremental innovation is positively related to quality*
- H5: Radical innovation is positively related to flexibility*
- H6: Incremental innovation is positively related to flexibility*
- H7: Radical innovation is positively related to delivery*
- H8: Incremental innovation is positively related to delivery*

3.3 The innovation capability is positively related to competitive advantage

4. Methodology

The study relied on the descriptive approach using the tools of descriptive-analytical statistics following (Asrat, & Miras, 2015). It relied on the two types of data being primary data and secondary data. The questionnaire was relied upon as a main data-collection tool, as it was designed according to the five-point Likert scale, which consists of five levels as follows: strongly agree, agree, neutral, disagree, and strongly disagree, as numbers were assigned for these phrases in the process of analysis, as follows: No. (1) Strongly disagree, number (2) disagree, number (3) neutral, number (4) agree, number (5) strongly agree. To verify the validity of the content of the study, tools are used to ensure that it serves the study's objectives; it was presented to a group of (5) competent arbitrators in business administration. After the questionnaire was retrieved from all the experts, their observations were considered, and the proposed amendments were made. The study population was made up of the managers of industrial firms operating in Khartoum State; the questionnaire was distributed a total number of 300 questionnaires returned 207 representing 80%, the two research relied

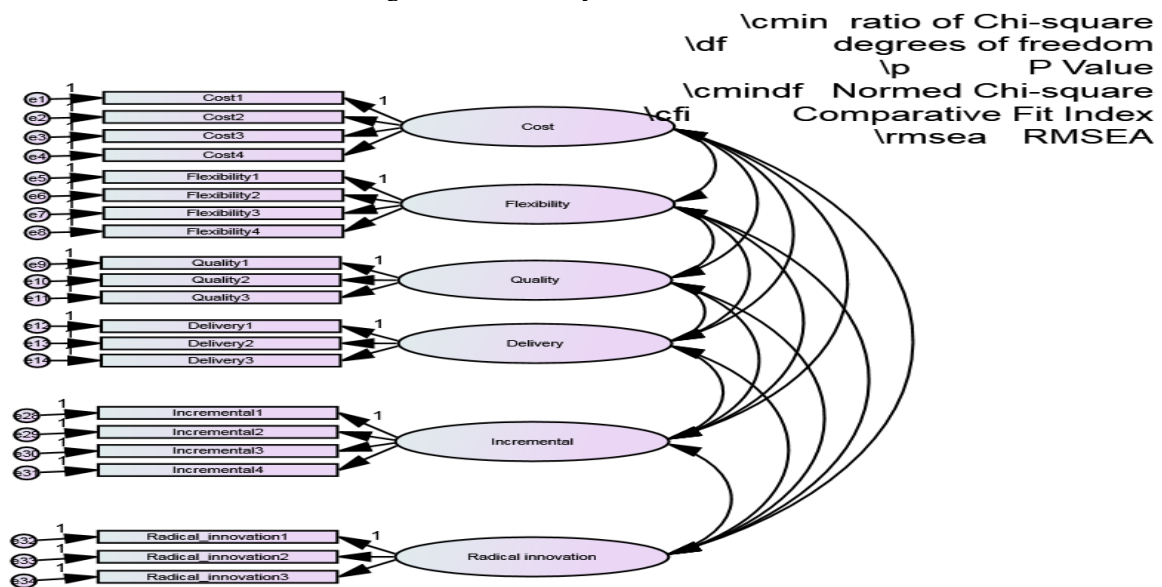
in the process of the statistical data analysis, on the method of Structural Equation Modeling, which is an assumed pattern of direct and indirect linear relationships between a range of underlying and observed variables, and the path analysis method has specifically been used since it has several advantages that are appropriate to the nature of this study. The questionnaire of this study consisted of three main sections mainly the profile of the company secondly, specific questions designed to measure innovation capability, and thirdly, specific questions designed to measure competitive advantage (cost, quality, delivery and flexibility); innovation capability was measured by using two dimensions the constructs of innovation capability (radical innovation and incremental innovation) are measured using seven items adapted from Regient et al., (2016); (Saeed, Bekhet & Dhar 2017); (Silassie, Dahalan, & Muhammad, 2021). Competitive advantage was measured by using four dimensions the constructs of competitive advantage (cost, quality, flexibility, and delivery), the cost was measured using five items adapted from (Sany, 2014), while quality was measured using three items adapted from Sachitra (2017), delivery was measured using four items adapted from Pong& Himanshu, (2017) and flexibility were measured using four items adapted from Khalifa (2016).

5. Data Analysis and Results

5.1 Factor analysis for study variable

In conducting factor analysis, this study followed assumptions that were recommended by [17]. Firstly, there must be enough statistically significant correlations in the matrix. Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy should be at least 0.6. Thirdly, Bartlett's test of sphericity should be significant at 0.05. Fourthly, the commonalities of items should be greater than 0.45. Fifthly, the minimum requirement of factor loading 0.45 (since the sample size of this study is 207 firm managers) is based on a 0.05 significant level, with the value of cross loading exceeding 0.45. Also, to provide a simple structure column for interpretation, the factors were subjected to Promax rotation. Finally, eigenvalues should be more than 1 for factor analysis extraction.

Figure: 2 factor analysis of CFA



5.2 Descriptive statistics and Reliability of the study variables

Table: 1 Reliability of the Study Variables

Construct	Variables	No of items	Mean	Std	Cronbach s alpha
Innovation capabilities	Radical innovation	4	4.073	.913	.860
	Incremental innovation	3	3.74	1.111	.860
Competitive advantage	Cost	4	3.98	.962	.849

Quality	2	4.02	1.018	.859
Delivery	3	3.88	1.006	.780
Flexibility	4	3.92	1.01	.890

The descriptive statistics for the study variables are presented in the table “Table 1”, the main value for radical innovation is 4.073 with a standard deviation of .913, incremental innovation is 3.74 with a standard deviation of 1.111, finally mean of competitive advantage cost is 3.98 with a standard deviation of .962, quality is 4.02 with a standard deviation of 1.018, Delivery is 3.88 with a standard deviation of 1.006 and flexibility is 3.92 with a standard deviation of 1.01. The Cronbach’s alpha value is calculated for checking the internal consistency of scales. It’s absorbed from this table, for all the variables, the alpha value is above 0.60, indicating that all variables’ scales are reliable.

5.3 Person correlation

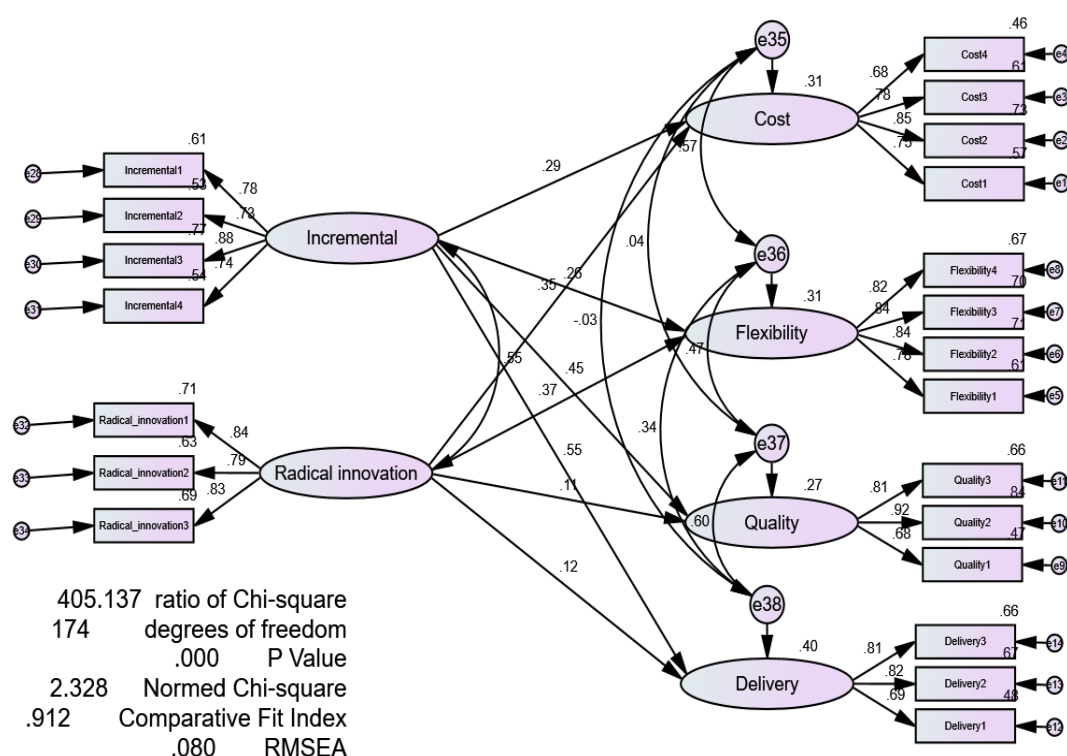
The correlation analysis was used between the study variables to identify the correlative relationship between the independent and dependent variables, so whenever the closer the degree of correlation to the integer one, the stronger the correlation between the two variables, whenever the less the degree of correlation than the integer one, the weaker the relationship between the two variables, and the relationship may be direct or inverse. In general, the relationship is weak if the value of the correlation coefficient is less than (0.30). It can be considered medium if the correlation coefficient value ranges between (0.30-0.70), yet if the correlation value is more than (0.70), the relationship is considered strong between variables. The correlation is considered positive if its value is negative.

Variables	Radical	Incremental	Cost	Quality	Delivery	Flexibility
Radical	1					
Incremental	.557	1				
Cost	.510	.482	1			
Quality	.367	.508	.600	1		
Delivery	.434	.622	.310	.310	1	
Flexibility	.519	.469	.702	.302	.310	1

5.4 Hypotheses testing

After the preliminary analyses, this part discusses the hypotheses testing and findings of the study. The hypotheses were tested with the path analysis that discloses the effect of independent variables on dependent variables through the structural equation modelling (SEM) that grows out of and serves purposes similar to multiple regression, but in a more powerful way which takes into account the modelling of interactions between variables, nonlinearities, correlated independents, measurement error, correlated error terms, Multiple latent independents each measured by multiple indicators and one or more latent dependents also each with multiple indicators (Saeed, & Bekhet 2018). The main hypotheses in this study assume that innovation capabilities dimensions (radical innovation and incremental innovation) have a positive relationship with the competitive advantage, as shown in figure 3: Therefore, to test these hypotheses, a similar process of path analysis using (AMOS) was conducted to predict the impacts of innovation capabilities dimensions on competitive advantage (cost, quality, delivery, and flexibility).

Figure: 3 Relationship between innovation capability and competitive advantage



The results of path analysis showing Model fit parameters consistent with recommendation as follow, CMIN= 405.137, DF= 174, CMIN/DF= 2.328, RMSEA = .080, GFI=.847, AGFI=.797, RMR=.061, NFI=.858, IFI=.913, CFI=.912, and PCLOSE=.000.

Table: 3 Regression Weights for innovation capabilities and CA

			Estimate	S.E.	C.R.	P
Cost	<---	Incremental	.295	.093	3.175	.001
Flexibility	<---	Incremental	.281	.095	2.948	.003
Quality	<---	Incremental	.418	.092	4.529	***
Delivery	<---	Incremental	.575	.105	5.455	***
Cost	<---	Radical	.261	.070	3.733	***
Flexibility	<---	Radical	.294	.072	4.067	***
Quality	<---	Radical	.079	.063	1.260	.208
Delivery	<---	Radical	.095	.068	1.393	.164

Source: prepared by researcher from data (2019)

6. Discussion

The study findings revealed that incremental innovation is significant and supports competitive advantage dimensions (cost, quality, flexibility, and delivery). This result confirmed that industrial firms' managers believe that continuous improvement of the product will enhance competitive advantage. Also, incremental innovation is the dominant form of innovation. For instance, Puga & Treffer (2010) provide evidence of the rise of incremental innovation in low-wage countries and show how it has contributed to increasing exports of high-quality and sophisticated manufactured goods. This result supported by the previous studies (Titus, Gregory & Fred, 2017) revealed that organizational innovation, product innovation, administration innovation and process innovation play a significant role in sustainable competitive advantage (Mburu, 2016) indicated that logistic firms in Mombasa County utilized innovation strategies namely: product innovation strategies, process innovation strategies, market innovation and organizational innovation strategies. Overall, it was shown that innovation strategies influence competitive advantage in logistic firms. Product innovation strategy had a positive and significant effect on competitive advantage,) Karanja, Kahuthia& Gakenia, 2018) showed that process innovation positively influences organizational performance.

The results revealed that radical innovation is a significant effect on competitive advantage (cost and flexibility). Therefore, this finding indicates that top managers of the firms concentrate on the low cost and reduce the time for market. The result supported by (Marcelo et al, 2016) brings a proper understanding that radical innovation plays a crucial role

for organizational performance in emerging economies. At the same time, radical innovation was not significant and not supported with competitive advantage (quality and delivery). This result agrees with (Regien et al, 2015) that term specificity has an inverse-u-shaped effect on incremental innovation and a negative effect on radical innovation. Furthermore, Sudanese industrial firms see radical innovation as a complex process. Generally, implies a difficult, lengthy, and risky process.

7. Conclusion and Implication:

The purpose of this paper was to develop an understanding of the linkage between innovation capabilities (radical innovation and incremental innovation) and competitive advantage (cost, quality, flexibility, and delivery). To achieve this objective, it was necessary first to hypothesise these causal relationships and examine the relationships empirically. Through empirical study, the research model of this paper was developed both from the literature review the study was applied among large Sudanese industrial firms in Khartoum state. Methodological issues were also addressed. The empirical study, afterwards, examined the research hypotheses. For the examination, the questionnaire survey was conducted research model and hypotheses were tested with SEM (Structural Equation Modelling). The study Demonstrate that innovation capabilities are essential for gaining a competitive advantage in industrial firms.

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